

could deny impairment of health and resistance before the obvious breakdown. The nutritional requirements of pregnancy deserve much more consideration and study. Recent reports indicate that health and well-being of the newborn infant can be correlated to a considerable degree with the adequacy of the maternal diet.³ A fascinating and undoubtedly important field of study lies in the possible rôle of preclinical or chronic nutritional deficiency in the pathogenesis of illness of obscure etiology. We have reported studies which have strongly suggested a contributory influence of vitamin C deficiency in rheumatic fever and rheumatoid arthritis.^{4,5} Man has inadvertently subjected himself in many cases to uncontrolled experimentation in chronic deficiency of one or several essential nutrients. To what extent do these deficiencies play a rôle in the chronic disease states from which he suffers? One of the most active and promising phases of research in the field of neoplastic diseases is concerned with the possible influence of nutritional factors. The large and important problems of mental and degenerative disease of the nervous system should be systematically explored from the standpoint of nutrition. The field of vitamin and enzyme chemistry is very closely related to the fields of chemotherapy and antibiotics. Nutritional research has contributed greatly to the progress of medicine and we may reasonably expect greater rewards from further studies. Such studies must be scientifically sound and in so far as possible based on objective methods of observation.

SUMMARY

Observations are reported relative to the detection of thiamin deficiency by assay of the thiamin content of blood. The importance of objective methods for evaluation of nutritional states is stressed. Such methods are needed for detection of subclinical deficiency, resulting from prolonged suboptimal nutrition and for detection of the earlier phases of deficiency disease which precede the obvious clinical manifestations. Such methods may be applied to surveys of population groups, in the evaluation of the possible rôle of nutritional deficiency in diseases of obscure etiology as well as in the management of individual cases. The rewards of nutritional investigations have been great and offer even greater promise for the future.

Medical Center, Third and Parnassus.

REFERENCES

1. Rinehart, J. F., and Greenberg, L. D.: The Detection of Subclinical Scurvy or Vitamin C Deficiency, *Ann. Int. Med.*, 1942, 17:672-680.
2. Greenberg, L. D., and Rinehart, J. F.: Methods for Determination of Thiamin in Blood and Tissues with Observations on Relative Contents, *Proc. Soc. Exper. Biol. and Med.*, 1945, 59:9-13.
3. Burke, Bertha S.: Nutrition and Its Relationship to the Complications of Pregnancy and the Survival of the Infant, *Am. Jour. Pub. Health*, 1945, 35:334-339.
4. Rinehart, J. F.: Rheumatic Fever and Nutrition, *Ann. Rheum. Dis.*, 1943, 3:154-167.
5. Rinehart, J. F., and Greenberg, L. D.: Vitamin C Nutrition and Metabolism in Rheumatoid Arthritis, *Proc. Sixth Pacific Science Congress*, 1939, 6:645-660.

Murphy Button.—With his flair for the dramatic and his frequent disputations on numerous medical issues, John B. Murphy was a colorful figure in the surgical world. The more of an audience in his clinic, the more perfect his technique. Always ready to advance in new fields where conservatives feared to tread, he soon gained the name of "stormy petrel of surgery." One of his biggest battles was against the scepticism of early diagnosis and operation in acute appendicitis. Though perhaps not seen by all, most physicians are familiar with the "Murphy Button."—*Warner's Calendar of Medical History.*

LUMBOSACRAL SUBARACHNOID BLOCK*

C. EUGENE SCHUETZ, M.D.

Los Angeles

THERE have been a number of different approaches used to block off the lower lumbar and sacral nerves. This paper will explain a method which was first introduced about six years ago by John A. Taylor, a urologist in New York City. The word "lumbosacral" refers to that area through which the needle is passed in doing this block, and likewise the area anesthetized, which is supplied by the lower lumbar and sacral nerves.

In reviewing the literature it is believed that this was the first time this approach was used in entering the subarachnoid space. However, it is possible that this site was not chosen before because it would be impossible to enter the spinal canal directly over this space. On examination of the skeleton it will readily be seen that the space which lies between the inferior surface of the 5th lumbar and the sacrum is the largest in the whole spinal column. The spinous process of the 5th lumbar overhangs this area and thus precludes any approach directly over this point in order to gain entrance to the canal.

In those cases in which there is a deviation of the spinous process of the 5th lumbar to one side, the space on the opposite side is thus increased, and the approach is made on this side. If one has access to the x-ray film before this procedure, it would naturally facilitate finding the best site of approach, but the operator does not always have this added information. In such a case the puncture is done the same as most spinals on the assumption that the structures are normal, and usually very little difficulty is encountered.

PREPARATION OF PATIENT

The preparation of the patient before coming to surgery is an important factor, and therefore it is the anesthetist's responsibility to examine the patient the night before surgery, and determine with what type of patient he is working, and order the proper medication. The preparation of the patient starts with 1½ to 3 grains of nembutal the night preceding surgery. In the morning 1½ to 3 grains of nembutal are given two hours before surgery. Then one hour later a hypodermic of Dilaudid, grain 1/32 or grain 1/20 with 1/200 of scopolamine is given. In the morning, after the medication, a mask is put over the patient's eyes, and cotton placed in the ears. These details seem to be commonplace, but they are valuable points in the success of the anesthetic.

POSITION OF PATIENT AND PROCEDURE

When the patient is placed on the operating table, he lies on his abdomen. The arms are placed above the head. A small pillow is placed in the lumbar area. Easy access to the canal is thus obtained by placing the patient in such a way that this area is as nearly level as possible. The skin is prepared with merthiolate or other antiseptic, and sterile drapes are placed around the field. The bony landmarks are then palpated; first, the crest of the ilium is located and an imaginary line drawn through to the opposite side will pass approximately between the fourth and fifth lumbar. Next the lowest prominence of the posterior superior iliac spine is palpated. A wheal is then raised about 1 cm. below and 1 cm. medially to this bony landmark. This site is about the location where entrance is gained to enter the 2nd sacral foramen.

At this point a few cc. of novocain are deposited both

* Chairman's Address. Read before the Section on Anaesthesiology, at the Seventy-fourth Annual Session of the California Medical Association, Los Angeles, May 6-7, 1945.

in the skin and deeper tissues. The spinal needle used is about 4½ to 5 inches in length, and 22 gauge. With the index finger resting on the spinous process of the fifth lumbar vertebra, the needle is passed through the wheal upward and medially, continuously pointing to the direction of the spine of the fifth lumbar. The upward angle is about 55 degrees, approximately the angle that the dorsal surface of the sacrum makes with the overlying skin at this point. The medial angle varies with the width of the sacrum, but the needle is so directed that it will be in the midline at the lumbosacral space. Care should be taken when directing the needle that it does not come in contact with the periosteum with much force as this may be a cause of much discomfort to the patient. In passing through the deeper structures the needle follows the course of the sacrum to the lumbosacral space. If the needle comes in contact with the bony structures its direction is changed slightly and advanced slowly and carefully. The sensations felt by the operator as the needle advances are about the same as one experiences in a higher puncture, and the characteristic feel is noted as the dura is penetrated.

In most cases as soon as the space is reached the spinal fluid appears, but not as forcefully as in the higher puncture in the side position. In some cases it is necessary to withdraw the spinal fluid. About 1 to 3 cc. of fluid are withdrawn, and to this 150 mg. of novocain and 5 mg. of pontocain are added, depending on the particular case and work to be done. This solution is slowly reinjected into the spinal canal. The response to the novocain is immediate. If a rectal operation is to be done, the patient is usually left in the same position; however any position can be used without harm to the patient if the rules of gravitation are applied the same as with the higher spinal. The blood pressure is recorded at short intervals and the patient should now be resting quietly. The Trendelenberg position can be used, the degree of which depends on the type of operation and other factors.

COMMENT

The advantages of this type of block are many. For most patients, lying in the prone position is much more comfortable than on the side in a flexed cramped position. However in some cases, when the patient cannot lie on the abdomen, the lumbosacral approach can be done with the patient on his side, but it is not necessary to flex the body to any great degree. This factor alone is of great advantage in obstetrical cases where a low block is desired for delivery.

This approach is of great value in those cases that are not able to bend their spine due to some pathological condition, such as arthritic changes or tuberculosis of the spine, or possibly a congenital bony defect.

This approach may be about the only method of procuring spinal fluid in meningitis and the accompanying opisthotonos. There is less fall in blood pressure and therefore less shock for the patient with this method. It is also a great advantage to the operator doing a prostatic resection not to have a great drop in the patient's blood pressure as all bleeding points can be stopped at the time of operation with no likelihood of hemorrhage from a rise in blood pressure after the patient has returned to his room. It is thus a safer anesthetic for the old and for those who are poor risks. Furthermore it is such an easy method that it can be used in the office without an assistant to hold the patient.

A review of one hundred of my cases done in a private hospital reveals the interesting fact that the average drop in blood pressure was only 10.8 systolic, and 6.5 diastolic. In fifteen cases there was no change in blood pressure. In a few cases one-half ampoule of ephedrine was used before injection. The average age of the patients was 67;

the youngest being 16, and the oldest 86 years. Only two patients had headaches which occurred shortly after surgery, but these could not be directly attributed to the anesthetic.

The cases in which this block was used were mostly urological; 48 cases were prostatectomies, transurethral, perineal, and suprapubic. There were cases of bladder fulguration, vasectomies, cystotomies. There were 19 hemorrhoidectomies and other rectal operations. The balance of the group included cervical biopsies, cauterizations, and various vaginal repairs. There were no complications of any notable degree recorded.

6253 Hollywood Boulevard.

PUBLIC HEALTH BACTERIOLOGY*

J. C. GEIGER, M. D.

San Francisco

BACTERIOLOGY and its allies (serology, immunology, mycology, parasitology, and virology) cease to become separate entities and merge under the larger field—Medicine.

It would be easy to indulge in histrionics to which the laboratory is so well adapted and which have so often been used. The creed of medicine has no place for histrionics and fantasy. We could presume, with pure speculation, that there must be a prize greater than the sulfa drugs and penicillin, just around the corner. There have been discoveries; there will be more.

PHYSICIANS IN RELATION TO PUBLIC HEALTH LABORATORIES

There are three general ways in which the relationship between physicians and the public health laboratories of tomorrow will be strengthened.

First—from these laboratories will come information which will give us a stronger hold on our knowledge of the etiology of infections. The background for much of our knowledge of diagnosis, treatment, and epidemiology hinges on an understanding of the etiology. This will help in many diseases, the etiology of which is not known or not understood. Differential diagnosis is increasingly difficult and dependent upon the laboratory. We are encouraged by glimpses of possible order to come in the confusing groups of diseases caused by viruses, rickettsiae, and yeasts and moulds. In the practice of a physician and in the epidemiologic control of infection, knowledge of the etiology has been a significant key in development. We may lose our grip on bacteriologic technicalities but we cannot afford to lose it on etiology and on diagnosis.

Second—we are sure to have significant technical improvements in the laboratories. We are likely to overlook the influence of these technical improvements on medical practice and public health. For example, there are thousands of culture media, and the adding of one or two more seems inconsequential. Wilson and Blair devised a medium which permits typhoid bacilli to grow as black colonies while almost everything else is inhibited. Leifson devised a desoxycholate medium and the Difco Laboratories prepared a Salmonella-Shigella medium known as SS medium. While these developments occurred some dozens of other culture media were added to the thousands that exist, yet the addition of these three has improved the quality of laboratory work in con-

* Chairman's Address. Read before the Section on Public Health, at the Seventy-fourth Annual Session of the California Medical Association, Los Angeles, May 6-7, 1945.

From the office of the Director of Public Health, City and County of San Francisco.